

SONY[®]

FLAT WIDE DISPLAY

FWD-40LX1

FWD-32LX1R

PROTOCOL MANUAL

1st Edition

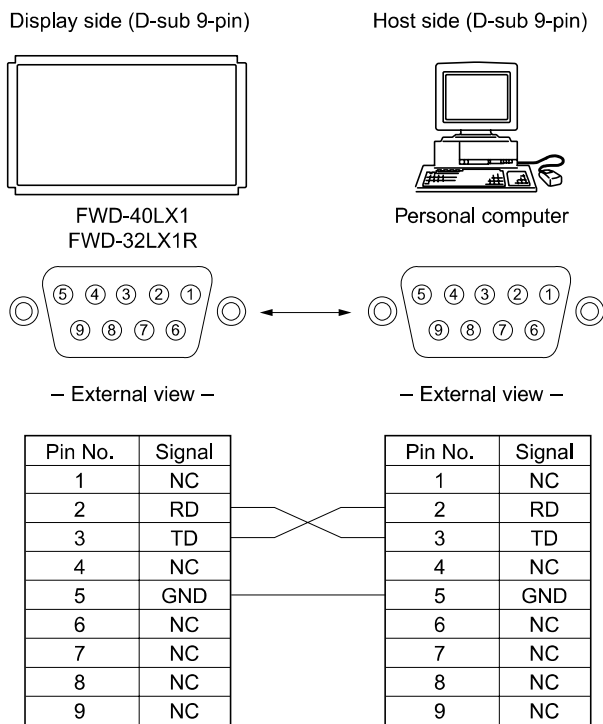
Table of Contents

1. Communication Parameter	1
2. Pin Configuration	1
3. Communication Data Format	1
4. General Function	3
5. Picture/Sound	11
6. Size/Shift	13
7. Status Enquiry	15
8. User Reset	18

1. Communication Parameter

Communication system	RS-232C
Synchronous system	Asynchronous communication
Baud rate	9600 bps
Character length	8 bit
Parity	None
Start bit	1 bit
Stop bit	1 bit
Flow control	None

2. Pin Configuration



3. Communication Data Format

(a) Control (Host → Request of Write to Display)

No.	Item	Value
1	Header	0x8C:Control
2	Category	0xXX
3	Function	0xXX
4	Data1 (Length)	0xXX
5	Data2 (Data1)	0xXX
:	:	0xXX
:	:	0xXX
X	Data (X-3)	0xXX
X+1	Check Sum	0xXX

- * Check Sum: Sum total of 1 to X. Lower one-byte data is validated when a value exceeds 255 (1 byte).
- * Set the command interval to 500 ms or more when transmitting the Control command continuously.
- * Set the command interval to 500 ms or more when transmitting the same command (Enquiry) after the Control command.

(b) Enquiry (Host → Request of Read to Display)

No.	Item	Value
1	Header	0x83:Enquiry
2	Category	0xXX
3	Function	0xXX
4	Data1	0xFF
5	Data2	0xFF
6	Check Sum	0xXX

- * Check Sum: Sum total of 1 to 5. Lower one-byte data is validated when a value exceeds 255 (1 byte).

(c) Answer (Display → Response to Host)

① Answer at the time of Control request

No.	Item	Value
1	Header	0x70: Answer
2	Answer*	0x00: Completed (Normal completion) 0x01: Limit Over (Abnormal completion: Over upper limit) 0x02: Limit Under (Abnormal completion: Under lower limit) 0x03: Command Canceled (Abnormal completion)
3	Check Sum	0xXX
* 0x00: Completed		Packet is correctly received and process is also correctly completed.
0x01: Limit Over		Packet is correctly received, but the data value is over the upper limit.
0x02: Limit Under		Packet is correctly received, but the data value is under the lower limit.
0x03: Command Canceled		Packet is correctly received, but the data value is not correct or the request cannot be accepted in the current host state.
* Check Sum:		If the value of a sum total of 1 and 2 exceeds 255 (1 byte), the data of 1 lower byte is effective.

② Answer at the time of Enquiry request
(Normal completion)

No.	Item	Value
1	Header	0x70: Answer
2	Answer	0x00: Completed
3	Return Data Size	0xXX
4	Return Data1	0xXX
:	:	0xXX
:	:	0xXX
X	Return Data (X-3)	0xXX
X+1	Check Sum	0xXX
* 0x00: Completed		Completed packet is correctly received and process is also correctly completed.
* Return Data		returns the read value.
* Check Sum:		If the value of a sum total of 1 to X exceeds 255 (1 byte), the data of 1 lower byte is effective.

③ Answer at the time of Enquiry request
(Abnormal completion)

No.	Item	Value
1	Header	0x70: Answer
2	Answer	0x03: Command Canceled (Abnormal completion)
3	Check Sum	0x73
* 0x03: Command Canceled		Packet is correctly received, but the data value is not correct or the request cannot be accepted in the current host state.

④ Error Answer

No.	Item	Value
1	Header	0xE0: Answer
2	Answer*	0x00: No Function Error 0x01: Check Sum Error 0x02: Data Length Error
3	Check Sum	0xXX
* 0x00: No Function Error		Packet header, category and function code are not included in this protocol.
0x01: Check Sum Error		Check sum value of received packet is not correct.
0x02: Data Length Error		Packet is correctly received, but the data size is over the upper limit.
* Check Sum:		If the value of a sum total of 1 and 2 exceeds 255 (1 byte), the data of 1 lower byte is effective.

4. General Function

(a) Mode control

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Control	0x8C	0x00	Code Table(1-a)[a]	0x02	Code Table(1-a)[b]	0xXX
Enquiry	0x83			0xFF	0xFF	0xXX

Answer	Header	Answer	Check Sum	
Control	0x70	0x00	0x70	Completed
	0x70	0x01	0x71	Limit Over
	0x70	0x02	0x72	Limit Under
	0x70	0x03	0x73	Command Canceled

Answer	Header	Answer	Return to Data Size	Return Data1	Check Sum	
Enquiry	0x70	0x00	0x02	Code Table (1-a)[b]	0xXX	Completed

Code Table(1-a)

[a]Function	[b]Range/Switch Code	Command Control	Enquiry	Standby	Power On
0x00 Power*1	0x00 OFF	Yes	Yes	Enable	Enable
	0x01 ON				
0x01 Input Select*2	0x0A INPUT2 RGB	Yes	Yes	Disable	Enable
	0x0B INPUT2 COMPONENT				
	0x0C OPTION1 VIDEO				
	0x0D OPTION1 S VIDEO				
	0x0E OPTION1 RGB				
	0x0F OPTION1 COMPONENT				
	0x10 OPTION2 VIDEO				
	0x11 OPTION2 S VIDEO				
	0x12 OPTION2 RGB				
	0x13 OPTION2 COMPONENT				
	0x20 INPUT1 DVI				
0x02 Force Status Display	0x00 ON	Yes	Yes	Disable	Enable
	0x01 OFF				
0x03 Audio Mute	0x00 OFF	Yes	Yes	Disable	Enable
	0x01 ON				
0x04 Auto Status Display	0x00 ON	Yes	Yes	Enable	Enable
	0x01 OFF				
0x05 Closed Caption	0x00 OFF	Yes	Yes	Disable	Enable
	0x01 CC1				
	0x02 CC2				
	0x03 CC3				
	0x04 CC4				

Code Table(1-a)

[a]Function	[b]Range/Switch Code	Command Control	Enquiry	Standby	Power On
0x06 Color System	0x00 Auto	Yes	Yes	Disable	Enable
	0x01 NTSC				
	0x02 NTSC4.43				
	0x03 PAL				
	0x04 SECAM				
	0x05 PAL-M				
	0x06 PAL-N				
	0x07 PAL60				
0x0F Language	0x00 Japanese	Yes	Yes	Disable	Enable
	0x01 English				
	0x02 Deutsch				
	0x03 Français				
	0x04 Español				
	0x05 Italiano				
0x10 Index Number	0x01 - 0xFF	Yes	Yes	Disable	Enable
0x13 Power Saving	0x00 Standard	Yes	Yes	Disable	Enable
	0x01 Reduce				
0x14 Speaker Out	0x00 ON	Yes	Yes	Disable	Enable
	0x01 OFF				
0x16 HD Mode	0x00 1080i	Yes	Yes	Disable	Enable
	0x01 1035i				
0x17 RGB Mode	0x00 DTV	Yes	Yes	Disable	Enable
	0x01 PC				
0x18 Sync Mode	0x00 H/Comp	Yes	Yes	Disable	Enable
	0x01 Video				
0x1B Clock Display	0x00 OFF	Yes	Yes	Disable	Enable
	0x1B ON				
0x24 Input Detect(Option1)	0x00 FW12(HD15)	No	Yes	Disable	Enable
	0x01 FW10(CVBS, Y/C)				
	0x02 FW11(BNC)				
	0x03 Reserved				
	0x04 FW31/32				
	0x05 FW50				
	0x06 Reserved				
	0x07 Reserved				
	0x08 Reserved				
	0x09 Reserved				
	0x0A Reserved				
	0x0B Reserved				
	0x0C Reserved				
	0x0D Reserved				
	0x0E Reserved				

(Continued)

Code Table(1-a)

[a]Function	[b]Range/Switch Code	Command Control	Enquiry	Standby	Power On
0x24 Input Detect(Option1)	0x0F Not Connect	No	Yes	Disable	Enable
0x25 Input Detect(Option2)	0x00 FW12(HD15)	No	Yes	Disable	Enable
	0x01 FW10(CVBS, Y/C)				
	0x02 FW11(BNC)				
	0x03 Reserved				
	0x04 FW31/32				
	0x05 FW50				
	0x06 Reserved				
	0x07 Reserved				
	0x08 Reserved				
	0x09 Reserved				
	0x0A Reserved				
	0x0B Reserved				
	0x0C Reserved				
	0x0D Reserved				
	0x0E Reserved				
0x0F Not Connect					
0x26 Auto Shut OFF	0x00 OFF	Yes	Yes	Disable	Enable
	0x01 ON				
0x30 PAP*2	0x00 OFF	Yes	Yes	Disable	Enable
	0x01 P&P				
	0x02 PinP				
0x31 Active Picture	0x00 Left(P&P)/Main(PinP)	Yes	Yes	Disable	Enable
	0x01 Right(P&P)/Sub(PinP)				
	0x02 Swap*2				
0x32 Picture Size(P&P)	0x00 - 0x0E	Yes	Yes	Disable	Enable
0x33 Sub Picture Size (PinP)	0x00 Large	Yes	Yes	Disable	Enable
	0x01 Small				
0x34 Picture Position(PinP)*3	0x00 Position1	Yes	Yes	Disable	Enable
	0x01 Position2				
	0x02 Position3				
	0x03 Position4				
0x35 PAP Input Detect (Left/Main)	0x0A INPUT2 RGB	No	Yes	Disable	Enable
	0x0B INPUT2 COMPONENT				
	0x0C OPTION1 VIDEO				
	0x0D OPTION1 S VIDEO				
	0x0E OPTION1 RGB				
	0x0F OPTION1 COMPONENT				
	0x10 OPTION2 VIDEO				
	0x11 OPTION2 S VIDEO				
	0x12 OPTION2 RGB				
	0x13 OPTION2 COMPONENT				

(Continued)

Code Table(1-a)

[a]Function	[b]Range/Switch Code	Command Control	Enquiry	Standby	Power On
0x35 PAP Input Detect (Left/Main)	0x20 INPUT1 DVI	No	Yes	Disable	Enable
0x36 PAP Input Detect (Right/Sub)	0x0A INPUT2 RGB	No	Yes	Disable	Enable
	0x0B INPUT2 COMPONENT				
	0x0C OPTION1 VIDEO				
	0x0D OPTION1 S VIDEO				
	0x0E OPTION1 RGB				
	0x0F OPTION1 COMPONENT				
	0x10 OPTION2 VIDEO				
	0x11 OPTION2 S VIDEO				
	0x12 OPTION2 RGB				
	0x13 OPTION2 COMPONENT				
	0x20 INPUT1 DVI				

*1: Transmit the next command 10 seconds after Power On and Power Off commands are transmitted. If not, correct data may not be able to be acquired.

*2: For INPUT SELECT, PAP, and Active Picture (SWAP), check the busy state using a Busy to INPUT command.

*3: The Picture Position arrangement is as shown below.

1	2
3	4

Code Table(1-a)

[a]Function	[b]Range/Switch code	Command Control	Enquiry	Standby	Power On
0x43 BackLight	0x00 - 0x64	Yes	Yes	Disable	Enable
0x44 Illumination	0x00 OFF	Yes	Yes	Disable	Enable
	0x01 Low				
	0x02 High				
0x45 Control Mode	0x00 Main+Remocon	Yes	Yes	Disable	Enable
	0x01 Main				
	0x02 Remocon				
0x46 On Off Timer Mode	0x00 Every Day	Yes	Yes	Enable	Enable
	0x01 Day Of Week				
0x47 On Timer Enable	bit0 Sunday 1:Enable, 0:Disable	Yes	Yes	Enable	Enable
	bit1 Monday 1:Enable, 0:Disable				
	bit2 Tuesday 1:Enable, 0:Disable				
	bit3 Wednesday 1:Enable, 0:Disable				
	bit4 Thursday 1:Enable, 0:Disable				
	bit5 Friday 1:Enable, 0:Disable				
	bit6 Saturday 1:Enable, 0:Disable				
	bit7 Every day 1:Enable, 0:Disable*4				

Code Table(1-a)

[a]Function	[b]Range/Switch code	Command Control	Enquiry	Standby	Power On
0x48 Off Timer Enable	bit0 Sunday 1:Enable, 0:Disable	Yes	Yes	Enable	Enable
	bit1 Monday 1:Enable, 0:Disable				
	bit2 Tuesday 1:Enable, 0:Disable				
	bit3 Wednesday 1:Enable, 0:Disable				
	bit4 Thursday 1:Enable, 0:Disable				
	bit5 Friday 1:Enable, 0:Disable				
	bit6 Saturday 1:Enable, 0:Disable				
	bit7 Every day 1:Enable, 0:Disable*4				
0x65 IP Setting Mode	0x00 DHCP	Yes	Yes	Enable	Enable
	0x01 Manual				
	0x02 Speed				
0x66 IP Setting Execute	0x00 No	No	Yes	Enable	Enable
	0x01 Yes				
0x67 IP Setting Result	0x00 Done	Yes	No	Enable	Enable
	0x01 Error 1 (UART Commu.)				
	0x02 Error 2 (Duplication)				
	0x03 Error 3 (IP Add Setting)				
	0x04 Error 4 (GW Add Setting)				
	0x05 Error 5 (DNS1 Setting)				
	0x06 Error 6 (DNS2 Setting)				
	0x07 Error 7 (Sbnt Msk Setting)				
0x68 Speed Setting	0x00 100Mbps/Full Duplex	Yes	Yes	Enable	Enable
	0x01 100Mbps/Half Duplex				
	0x02 10Mbps/Full Duplex				
	0x03 10Mbps/Half Duplex				
	0x04 Auto				

*4: For every day, all bits should be put in the same state. (Enable:0xff, Disable:0x00)

(b) Color matrix

Syntax	Header	Category	Function	Data1	Data2	Data3	Data3	Check Sum
Control	0x8C	0x00	Code Table (1-b)[a]	0x04	Code Table (1-c)	Code Table (1-b)[b]	Code Table (1-d)	0xXX

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x00	Code Table(1-b)[a]	Code Table (1-c)	Code Table (1-d)	0xXX

Answer	Header	Answer	Check Sum
Control	0x70	0x00	0x70 Completed
	0x70	0x03	0x73 Command Canceled

Answer	Header	Answer	Return to Data Size	Return Data1	Return Data2	Return Data3	Check Sum
Enquiry	0x70	0x00	0x04	Code Table (1-c)	Code Table (1-b)[b]	Code Table(1-d)	0xXX Completed

Code Table(1-b)

[a]Function	[b]Range/Switch code	Command Control	Enquiry	Standby	Power On
0x1D Color Matrix	0x00 YCbCr	Yes	Yes	Disable	Enable
	0x01 YPbPr				

Code Table(1-c)

Format Select	
0x00	480p
0x01	1080i
0x02	720p
0x03	480i

Code Table(1-d)

Input Select	
0x00	Input2
0x01	Option1
0x02	Option2 (Invalid for FWD-32LX1R)

(c) Time control

Clock Set (Hour, Minute)

Syntax	Header	Category	Function	Data1	Data2	Data3	Check Sum
Control	0x8C	0x00	0x22	0x03	Hour:0x00 - 0x17	Minute:0x00 - 0x3B	0xXX

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x00	0x22	0xFF	0xFF	0xA3

Answer	Header	Answer	Check Sum
Control	0x70	0x00	0x70 Completed
	0x70	0x01	0x71 Limit Over
	0x70	0x02	0x72 Limit Under
	0x70	0x03	0x73 Command Canceled

Answer	Header	Answer	Return to Data Size	Return Data1	Return Data2	Check Sum
Enquiry	0x70	0x00	0x03	Hour:0x00 - 0x17*	Minute:0x00 - 0x3B	0xXX Completed

* Data of Hour: 0x80 and Minute: 0x00 is set as Return Data when a timer is not set after factory setting.

Clock Set (Week)

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Control	0x8C	0x00	0x23	0x02	Week:Code Table(1-e)	0xXX

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x00	0x23	0xFF	0xFF	0xA4

Answer	Header	Answer	Check Sum
Control	0x70	0x00	0x70
	0x70	0x01	0x71
	0x70	0x02	0x72
	0x70	0x03	0x73

Answer	Header	Answer	Return to Data Size	Return Data1	Check Sum
Enquiry	0x70	0x00	0x02	Week:Code Table(1-e)	0xXX

Code Table(1-e)

Week Select	
0x00	Sunday
0x01	Monday
0x02	Tuesday
0x03	Wednesday
0x04	Thursday
0x05	Friday
0x06	Saturday

On Timer, Off Timer

Syntax	Header	Category	Function	Data1	Data2	Data3	Check Sum
Control	0x8C	0x00	Code Table(1-f)[a]	0x03	Hour:0x00 - 0x17	Minute:0x00 - 0x3B	0xXX

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x00	Code Table(1-f)[a]	0xFF	0xFF	0xXX

Answer	Header	Answer	Check Sum
Control	0x70	0x00	0x70
	0x70	0x01	0x71
	0x70	0x02	0x72
	0x70	0x03	0x73

Answer	Header	Answer	Return to Data Size	Return Data1	Return Data2	Check Sum
Enquiry	0x70	0x00	0x03	Hour:0x00 - 0x17	Minut:0x00 - 0x3B	0xXX

Code Table(1-f)

[a]Function	[b]Range/Switch code	Command Control	Enquiry	Standby	Power On
Clock Set					
0x22	Hour, Minute	Yes	Yes	Disable	Enable
0x23	Week				
On Timer					
0x50	Sunday	Yes	Yes	Disable	Enable
0x51	Monday				
0x52	Tuesday				
0x53	Wednesday				
0x54	Thursday				
0x55	Friday				
0x56	Saturday				
0x57	Every day				
Off Timer					
0x58	Sunday	Yes	Yes	Disable	Enable
0x59	Monday				
0x5A	Tuesday				
0x5B	Wednesday				
0x5C	Thursday				
0x5D	Friday				
0x5E	Saturday				
0x5F	Every day				

(d) IP Address Setting

IP Address

Syntax	Header	Category	Function	Data1	Data2	Data3	Data4	Data5	Check Sum
Control	0x8C	0x00	0x42	0x05	Address 0 0x00 - 0xFF	Address 1 0x00 - 0xFF	Address 2 0x00 - 0xFF	Address 3 0x00 - 0xFF	0xXX

Subnet Mask

Syntax	Header	Category	Function	Data1	Data2	Data3	Data4	Data5	Check Sum
Control	0x8C	0x00	0x61	0x05	Address 0 0x00 - 0xFF	Address 1 0x00 - 0xFF	Address 2 0x00 - 0xFF	Address 3 0x00 - 0xFF	0xXX

Gateway Address

Syntax	Header	Category	Function	Data1	Data2	Data3	Data4	Data5	Check Sum
Control	0x8C	0x00	0x62	0x05	Address 0 0x00 - 0xFF	Address 1 0x00 - 0xFF	Address 2 0x00 - 0xFF	Address 3 0x00 - 0xFF	0xXX

DNS Primary

Syntax	Header	Category	Function	Data1	Data2	Data3	Data4	Data5	Check Sum
Control	0x8C	0x00	0x63	0x05	Address 0 0x00 - 0xFF	Address 1 0x00 - 0xFF	Address 2 0x00 - 0xFF	Address 3 0x00 - 0xFF	0xXX

DNS Secondary

Syntax	Header	Category	Function	Data1	Data2	Data3	Data4	Data5	Check Sum
Control	0x8C	0x00	0x64	0x05	Address 0 0x00 - 0xFF	Address 1 0x00 - 0xFF	Address 2 0x00 - 0xFF	Address 3 0x00 - 0xFF	0xXX

Answer	Header	Answer	Check Sum
Control	0x70	0x00	0x70
	0x70	0x03	0x73
			Completed
			Command Canceled

Example of IP Address

192.128.14.1 192 (0xC0) Address 0
 128 (0x80) Address 1
 14 (0x0E) Address 2
 1 (0x01) Address 3

* IP Address command can be carried out even in the standby state.

Code Table(1-a)

[a]Function	[b]Range/Switch code	Command Control	Enquiry	Standby	Power On
0x42 IP Address		Yes	Yes	Enable	Enable
0x61 Subnet Mask					
0x62 Gateway Address					
0x63 DNS Primary					
0x64 DNS Secondary					

5. Picture/Sound

(a) Picture/Sound

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Control	0x8C	0x10	Code Table(2-a)[a]	0x02	Code Table(2-a)[b]	0xXX
Enquiry	0x83			0xFF	0xFF	0xXX

Answer	Header	Answer	Check Sum
Control	0x70	0x00	0x70
	0x70	0x01	0x71
	0x70	0x02	0x72
	0x70	0x03	0x73
			Completed
			Limit Over
			Limit Under
			Command Canceled

Answer	Header	Answer	Return to Data Size	Return Data1	Check Sum
Enquiry	0x70	0x00	0x02	Code Table(2-a)[b]	0xXX
					Completed

Code Table(2-a)

[a]Function		[b]Range/Switch code		Command Control	Enquiry	Standby	Power On
0x00	Contrast	0x00 - 0x64*		Yes	Yes	Disable	Enable
0x01	Brightness	0x00 - 0x64*		Yes	Yes	Disable	Enable
0x02	Chroma	0x00 - 0x64		Yes	Yes	Disable	Enable
0x03	Phase	0x00 - 0x64		Yes	Yes	Disable	Enable
0x04	Color Temp	0x00	Cool	Yes	Yes	Disable	Enable
		0x01	Neutral				
		0x02	Warm				
		0x03	Color1				
		0x04	Color2				
		0x05	Color3				
0x09	Sharpness	0x00 - 0x0A		Yes	Yes	Disable	Enable
0x0A	NR	0x00	OFF	Yes	Yes	Disable	Enable
		0x01	Low				
		0x02	Mid				
		0x03	High				
0x0B	Cinema Drive	0x00	Auto	Yes	Yes	Disable	Enable
		0x01	OFF				
0x0C	Dynamic Picture	0x00	OFF	Yes	Yes	Disable	Enable
		0x01	Low				
		0x02	High				
0x0D	Color Correct	0x00	ON	Yes	Yes	Disable	Enable
		0x01	OFF				
0x0E	Gamma Correct	0x00	High	Yes	Yes	Disable	Enable
		0x01	Mid				
		0x02	Low				
0x10	Picture Mode	0x00	Standard	Yes	Yes	Disable	Enable
		0x01	Vivid				
		0x02	User1				
		0x03	User2				
		0x04	User3				
0x30	Volume	0x00 - 0x64		Yes	Yes	Enable	Enable
0x31	Treble	0x00 - 0x64		Yes	Yes	Disable	Enable
0x32	Bass	0x00 - 0x64		Yes	Yes	Disable	Enable
0x33	Balance	0x00 - 0x64		Yes	Yes	Disable	Enable
0x34	Surround	0x00	OFF	Yes	Yes	Disable	Enable
		0x01	Hall				
		0x02	Simulate				

*: The setting value during two-screen display is as follows:

Contrast: Setting value ± 12 during one-screen display

Brightness: Setting value ± 24 during one-screen display

(b) Color temperature

Syntax	Header	Category	Function	Data1	Data2	Data3	Check Sum
Control	0x8C	0x10	Code Table(2-b)[a]	0x03	Code Table(2-c)	Code Table(2-b)[b]	0xXX

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x10	Code Table(2-b)[a]	Code Table(2-c)	0xFF	0xXX

Answer	Header	Answer	Check Sum
Control	0x70	0x00	0x70
	0x70	0x03	0x73

Answer	Header	Answer	Return to Data Size	Return Data1	Return Data2	Check Sum
Enquiry	0x70	0x00	0x03	Code Table(2-c)	Code Table(2-b)[b]	0xXX

Code Table(2-b)

[a]Function	[b]Range/Switch code	Command Control	Enquiry	Standby	Power On
0x05 Red Gain	0x00 - 0x0A	Yes	Yes	Disable	Enable
0x06 Green Gain	0x00 - 0x0A				
0x07 Blue Gain	0x00 - 0x0A				

Code Table(2-c)

Format Select
0x03 Color1
0x04 Color2
0x05 Color3

6. Size/Shift

(a) 8 bit register

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Control	0x8C	0x20	Code Table(3-b)[a]	0x02	Code Table(3-b)[b]	0xXX
Enquiry	0x83			0xFF	0xFF	0xXX

Answer	Header	Answer	Check Sum
Control	0x70	0x00	0x70
	0x70	0x01	0x71
	0x70	0x02	0x72
	0x70	0x03	0x73

Answer	Header	Answer	Return to Data Size	Return Data1	Check Sum	
Enquiry	0x70	0x00	0x02	Code Table(3-b)[b]	0xXX	Completed

Code Table(3-b)

[a]Function	[b]Range/Switch code	Command Control	Enquiry	Standby	Power On		
0x00	H Size	0x00 - 0x64	Yes	Yes	Disable	Enable	
0x01	H Center	0x00 - 0x64	Yes	Yes	Disable	Enable	
0x02	V Size	0x00 - 0x64	Yes	Yes	Disable	Enable	
0x03	V Center	0x00 - 0x64	Yes	Yes	Disable	Enable	
0x04	Aspect	0x00	Wide Zoom	Yes	Yes	Disable	Enable
		0x01	Zoom				
		0x02	Full				
		0x03	Sub Title				
		0x04	Normal				
0x05	Multi Display	0x00	OFF	Yes	Yes	Disable	Enable
		0x01	x2				
		0x02	x3				
		0x03	x4				
0x07	Dot Phase	0x00 - 0x1F	Yes	Yes	Disable	Enable	
0x08	Auto Wide	0x00	OFF	Yes	Yes	Disable	Enable
		0x01	ON				
0x09	4:3 Mode	0x00	Normal	Yes	Yes	Disable	Enable
		0x01	Wide Zoom				
0x0B	Multi Position(x2)*	0x00	Position1	Yes	Yes	Disable	Enable
		0x01	Position2				
		0x02	Position3				
		0x03	Position4				
0x0C	Multi Position(x3)*	0x00	Position1	Yes	Yes	Disable	Enable
		0x01	Position2				
		0x02	Position3				
		0x03	Position4				
		0x04	Position5				
		0x05	Position6				
		0x06	Position7				
		0x07	Position8				
		0x08	Position9				
0x0D	Multi Position(x4)*	0x00	Position1	Yes	Yes	Disable	Enable
		0x01	Position2				
		0x02	Position3				
		0x03	Position4				
		0x04	Position5				
		0x05	Position6				
		0x06	Position7				

Code Table(3-b)

[a]Function	[b]Range/Switch code	Command Control	Enquiry	Standby	Power On	
0x0D Multi Position(x4)*	0x07	Position8	Yes	Yes	Disable	Enable
	0x08	Position9				
	0x09	Position10				
	0x0A	Position11				
	0x0B	Position12				
	0x0C	Position13				
	0x0D	Position14				
	0x0E	Position15				
	0x0F	Position16				

*: The Multi Position arrangement is as shown below.

Multi Position(x2)

1	2
3	4

Multi Position(x3)

1	2	3
4	5	6
7	8	9

Multi Position(x4)

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

7. Status Enquiry

(a) Model name enquiry

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x30	0x00 (Code Table(4-d)[a])	0xFF	0xFF	0xB1

Answer	Header	Answer	Return to Data Size	Return Data1	Check Sum
Enquiry	0x70	0x00	0x02	Code Table(4-a)	0xFF Completed

Code Table(4-a)

Format Select
0x0A FWD-40LX1
0x0B FWD-32LX1R

(b) Serial number enquiry

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x30	0x01 (Code Table(4-d)[a])	0xFF	0xFF	0xB2

Answer	Header	Answer	Return to Data Size	Return Data1	Return Data2	Return Data3	Return Data4	Check Sum	
Enquiry	0x70	0x00	0x05	Upper 8bit Data	Middle Upper Data	Middle Lower Data	Lower 8bit Data	0xXX	Completed

Return Data1-Data4: 0x001E8480 - 0x002DC6BF(2,000,000 - 2,999,999)

(c) Operating time enquiry

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x30	0x02 (Code Table(4-d)[a])	0xFF	0xFF	0xB3

Answer	Header	Answer	Return to Data Size	Return Data1	Return Data2	Return Data3	Return Data4	Check Sum	
Enquiry	0x70	0x00	0x05	Upper 8bit Data	Middle Upper Data	Middle Lower Data	Lower 8bit Data	0xXX	Completed

Return Data1-Data4: 0x00000000 - 0xD693A3FF(0sec.-3,599,999,999sec.)

(d) Software version enquiry (Main CPU)

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x30	0x03 (Code Table(4-d)[a])	0xFF	0xFF	0xB4

Answer	Header	Answer	Return to Data Size	Return Data1	Return Data2	Check Sum	
Enquiry	0x70	0x00	0x03	Upper 8bit Data	Lower 8bit Data	0xXX	Completed

Return Data1-Data2: 0x0000 - 0xFFFF

Example)

For version 1.000, they become 10 and 00, respectively.

(e) 8 bit register enquiry

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x30	Code Table(4-b)[a]	0xFF	0xFF	0XX

Answer	Header	Answer	Return to Data Size	Return Data1	Check Sum	
Enquiry	0x70	0x00	0x02	Code Table(4-b)[b]	0xXX	Completed

Code Table(4-b)

[a]Function	[b]Return Data	Unit
0x07	Digital 3.3 V	0x00 - 0xFF
0x09	Digital 5 V	0x00 - 0xFF
0x0A	Temp1	0x00 - 0xFF
0x0D	Temp(P/S)	0x00 - 0xFF
0x10	Analog5 V/9 V	0x00 - 0xFF 5 V power output
0x20	Busy to Input	0x00: Not Busy 0x01: Busy

(f) Software version enquiry (Scaler)

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x30	0x0F (Code Table(4-d)[a])	0xFF	0xFF	0xC0

Answer	Header	Answer	Return to Data Size	Return Data1	Return Data2	Check Sum
Enquiry	0x70	0x00	0x03	Upper 8bit Data	Lower 8bit Data	0xFF Completed

Return Data1 - Data2: 0x0000 - 0xFFFF

Example)

For version 1.000, they become 10 and 00, respectively.

(g) Shutdown Log enquiry

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Enquiry	0x83	0x30	0x11 (Code Table(4-d)[a])	0xFF	0xFF	0xC2

Answer	Header	Answer	Return to Data Size	Return Data1	Check Sum
Enquiry	0x70	0x00	0x02	Code Table(4-c)	0xFF Completed

Return Data1: 0x00 - 0xFF

Code Table(4-c)

Shutdown Information		
bit0	Reserved	
bit1	1: FAN operation is abnormal	0: Normal
bit2	1: Backlight is abnormal	0: Normal
bit3	1: Temperature sensor is abnormal	0: Normal
bit4	1: Main power supply is abnormal	0: Normal
bit5	1: Digital power supply is abnormal (3.3 V, 5 V)	0: Normal
bit6	1: Analog supply is abnormal (5 V/9 V)	0: Normal
bit7	1: Scaler is abnormal	0: Normal

Code Table(4-d)

[a]Function	[b]Range/Switch code	Command Control	Enquiry	Standby	Power On
0x00 Model Name	0x0A - 0x0B	No	Yes	Enable	Enable
0x01 Serial Number	0x001E8480 - 0x002DC6BF (2,000,000 - 2,999,999)	Yes	Yes	Enable	Enable
0x02 Operation Time	0x00000000 - 0xD693A3FF (0sec.-3,599,999,999sec.)				
0x03 Soft Version(Main)	0x0000 - 0xFFFF	No	Yes	Enable	Enable
0x07 Digital 3.3 V	0x00 - 0xFF				
0x09 Digital 5 V	0x00 - 0xFF				
0x0A Temp1	0x00 - 0xFF				
0x0D Temp(P/S)	0x00 - 0xFF				
0x0F Soft Version(Scaler)	0x0000 - 0xFFFF				
0x10 Analog5 V/9 V	0x00 - 0xFF				(Continued)

Code Table(4-d)

[a]Function	[b]Range/Switch code	Command Control	Enquiry	Standby	Power On
0x11 Shutdown Log	0x00 - 0xFF	No	Yes	Enable	Enable
0x12 Digital 3.3 V(Failure)	0x00 - 0xFF				
0x13 Digital 5 V(Failure)	0x00 - 0xFF				
0x14 Analog5 V/9 V(Failure)	0x00 - 0xFF				
0x20 Busy to INPUT*	0x00 Non Busy 0x01 Busy				

* Busy to INPUT should be judged by Busy → Non Busy. Busy to INPUT may be incorrectly judged during start when it is judged by only Non Busy.

8. User Reset

Syntax	Header	Category	Function	Data1	Data2	Check Sum
Control	0x8C	0x50	Code Table(5)	0x02	0xFF	0xXX

Answer	Header	Answer	Check Sum
Control	0x70	0x00	0x70 Completed
	0x70	0x03	0x73 Command Canceled

Code Table(5)

Function	Range/Switch code	Command Control	Enquiry	Standby	Power On
0x00 Picture Reset		Yes	No	Disable	Enable
0x01 Audio Reset					
0x03 Picture Reset2	Contrast, Brightness, Chroma, Phase				
0x04 All Reset					

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